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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,883	07/11/2001	Meichun Ruan	12218.1100	9836
29906	7590	06/15/2004	EXAMINER	
INGRASSIA FISHER & LORENZ, P.C. 7150 E. CAMELBACK, STE. 325 SCOTTSDALE, AZ 85251			SONG, SARAH U	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

09/902,883

Applicant(s)

RUAN ET AL.

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's communication filed on March 24, 2004 has been carefully considered and placed of record in the file. Claims 1, 5, 13 and 14 have been amended. New claims 21-24 have been added. Claims 1-24 are pending.

Claim Objections

2. Claim 5 is objected to because of the following informalities: In claim 5, line 2, Examiner suggests changing "cantilevers" to —cantilever—. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1, 2, 8, 12, 14-16 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Athale (U.S. Patent 6,501,869 previously relied upon).** Athale discloses a device for transmitting optical signals, said device comprising: a substrate (body of switch 1990), an optical input accepting said optical signals 1910, 1920 and 1930 so that the optical signals travel substantially parallel to the substrate; a control device coupled to the substrate directing said optical signals substantially parallel to the substrate between said optical input and an optical output, the control device including at least one mirror element 1911 having a cantilever (column 5, line 21 and column 11, line 21); and a channel (waveguide) 1916 and 1946 located between said optical input and said optical output confining said optical signals to a

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predetermined path. The mirror element 1911 is configured to reflect said optical signal within said device as shown in Figure 19. Athale also discloses the wall of the channel to be reflective (column 8, lines 6-11) and discloses a channel mirror 1941 configured to receive said optical signal 1910 (reflected as beam 1920) and to direct said optical signal through said channel.

Likewise, the method is inherent as setting forth requisite steps for the operation of the device of Athale. It is noted that the cantilever is switched such that said reflective portion is placed in the path of said optical signal when said optical signal is desired at a first output on a first one of the predetermined paths, and such that said reflective portion is placed out of the path of said signal when said optical signal is desired at a second output on a second one of said predetermined paths (see Figure 13c for example). It is additionally noted that the conducting step comprises directing said optical signal (e.g. 1940) away from said reflective wall (e.g. wall of channel 1916) with a channel mirror (e.g. 1941). It is noted that the embodiment of Figure 19 is a switch.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 3-7, 9-11, 13, 17, 18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Athale in view of Judy et al. (U.S. Patent 5,945,898 previously relied upon).** Athale discloses the claimed invention as discussed above, but does not specifically disclose the cantilever having a magnetically sensitive portion configured to be switched by one of a plurality of electromagnetic signals, wherein each of said electromagnetic signals induce a

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magnetic torque in the cantilever, wherein said plurality of electromagnetic signals comprise magnetic signals generated by a plurality of conductors, wherein said plurality of electromagnetic signals comprise electrostatic signals generated by a plurality of electrodes or wherein said reflective wall comprises one of the group consisting of aluminum, gold, silver and chromium.

7. Reflective coatings consisting of one of aluminum, gold, silver and chromium are well known in the art. One of ordinary skill in the art would have found it obvious to provide the reflective wall of Athale with any well-known reflective coating, since applicant has not disclosed that the particular reflective material solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with any well known reflective coating.

8. Judy et al. disclose a plurality of mirror elements or reflectors (102), i.e. magnetic plate with a mirror coating (column 5, lines 15-16), each comprising a cantilever having a magnetically sensitive portion and a reflective portion, wherein each of said cantilevers is configured to be switched between a first state and a second state by one of a plurality of electromagnetic signals (i.e. magnetic field 118) consisting of magnetic signals generated by conductors 302 or electrostatic signals generated by electrodes 112 and 114. It is noted that the magnetic field 118 induces a torque in the cantilever.

9. Specifically regarding claims 21-24, Judy et al. discloses the control device comprising a cantilever beam having a reflective portion and a magnetic plate 102, but does not specifically disclose the magnetic plate to be a permanent magnet. However, since the magnetic plate retains its magnetism regardless of the externally applied magnetic field, it would have been obvious to

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one having ordinary skill in the art at the time the invention was made that the magnetic plate 102 is also a permanent magnet. Furthermore, the conductor 302 causes the control device to move between first and second positions each time energy (from source 316) is passed through the conductor.

10. One of ordinary skill in the art would have found it obvious to incorporate the magnetic actuation of Judy et al. into the switch of Athale since the deflectors of both Athale and Judy et al. are operationally similar with regards to movement.

11. One of ordinary skill in the art would have been motivated to make such a modification to combine the features of electrostatic forces and magnetic forces within the switching arrangement of Athale since the actuation scheme of Judy et al. provides superior and compact arrays of microactuated structures that can be batch-processed (column 2, lines 37-44).

Response to Arguments

12. Applicant states that Athale, “fails to teach of light traveling parallel to a substrate from an input to an output, as recited in claims 1 and 14”. It is noted that claims 1 and 14 claim, “an optical input accepting said optical signals so that the optical signals travel substantially parallel to the substrate; a control device coupled to the substrate directing said optical signals substantially parallel to the substrate between said optical input and an optical output...” In Figure 19 of Athale, for example, the optical signal travels substantially parallel to the substrate from the optical input. Furthermore, the overall path of the optical signal between the optical input and the optical output is substantially parallel to the substrate since the majority of the path is parallel to the substrate. The length of the path of the beam between the mirrors of the control device is a minimal. Additionally, the control device as a whole directs the optical signals

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substantially parallel to the substrate between the optical input and the optical output. The optical signals are directed substantially parallel to the substrate by the control device and thus the optical signals travel substantially parallel to the substrate.

13. Applicant also states that Athale and Judy fail to teach the light beams confined to predetermined paths. Examiner respectfully disagrees. Athale makes several references to a waveguide, such as waveguides 1916 and 1946. Waveguides inherently confine light beams to a predetermined path. Therefore the claimed limitation is clearly taught by Athale.

14. Applicant further states that none of the applied patents teach the features of claims 21-24. Examiner respectfully disagrees. The features of claims 21-24 would have been obvious as stated in the rejection above.

Conclusion

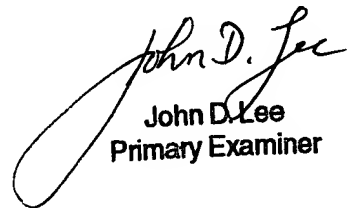
15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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16. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 571-272-2359. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 571-272-1562 or to the technical support staff supervisor at telephone number 571-272-1615.


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John D. Lee
Primary Examiner